



INTERACTIVE FIRE ALARM SYSTEM
POLON 4000

INTERACTIVE
INDISPENSABLE
FOR SMALL AND MEDIUM-SIZED
FACILITIES



FIRE ALARM SYSTEM POLON 4000

Overview

Interactive, addressable fire alarm system POLON 4000 is the set of devices, designed for detection and signalling of fire, informing of suitable intervention services and for control of fire protection devices. It makes possible protection of small and medium buildings.

It is perfectly suitable for application in responsible safety systems of "intelligent" buildings, because it is able to deliver a full set lot of digital information to integration and supervision systems, as well as to fire monitoring systems.

POLON 4000 system bases on the principle of intelligent co-operation between all elements forming this system. Applied original protocol of signals transmission in detector loops and suitable programs of the control panels and line elements, allow for interactive co-operation both line elements with the control panel and line elements between them.

Common information exchange between fire detectors, which gives very early information about events in the protected area, ensures exact automatic analysis of event observed by the system. This process allows to distinguish fire threat condition from short disturbance.

All the line elements in POLON 4000 system have short-circuit isolators with possibility to switch them ON/OFF by the software. Setting of line elements addresses can be also made with program, without using micro switches. All information about element are placed in its non-volatile memory and are read by the control panel after installing element in a detector line. Due to application of radio communicating detectors and manual call points, POLON 4000 system can be installed in places, where using of detection lines made with wires is not possible. Elements of POLON 4000 system fulfill requirements of the latest editions of series EN 54 European Standards.

POLON 4200 Control Panel

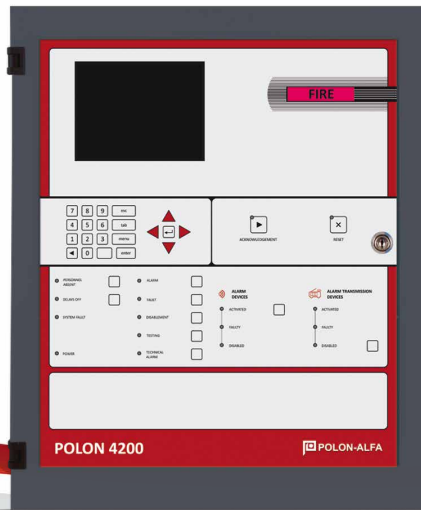
The POLON 4200 and POLON 4100 control panels are designed for installation of fire detecting and signalling systems in medium and small buildings.

POLON 4100 and POLON 4200 panels can operate with fire detector of series 6046 and 4046 range. All other elements are common for all POLON 4000 system control panels.

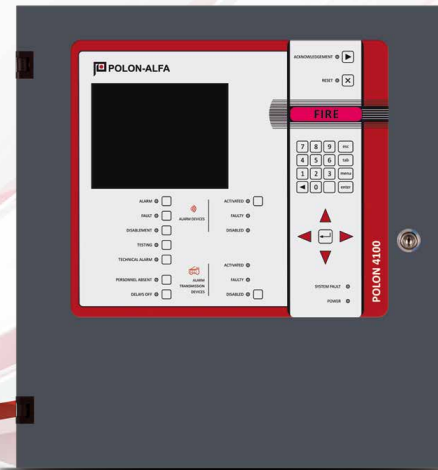
Addressable detectors of each control panel can be assigned to one of 128 or 256 detection zones and named with user communicate that can consist with two lines of text with 32 characters in each. Moreover, there is possibility to program own communicates for, so called, technical alarms and unmaskable faults, that refers to supervising functions of different kind of sub-systems or safety devices that the control panel can provide. Large graphic display facilitates communication of the user with the control panel.

One of 17 alarming variants for each detection zone can be selected with software. Different alarming variants, responding to different detection algorithms, allow for optimal utilisation of possibilities offering by the system for fire detection taking into account environmental conditions existing in individual facilities. Due to advanced software, the control panel enables to create fire detection installation with flexible physical and logical structure. The POLON 4100 and POLON 4200 control panels can fulfill the control of signalling and fire protective devices and functions using potential free relays outputs, 24 V outputs and monitoring inputs. Apart from this, unlimited control possibilities give input/output module EKS-4001(W) and EWS-4001 control module with 8 outputs, which are installed in detection loop. Control panel outputs can be triggered by the fire condition in particular zone or group of zones.

Serial interfaces USB, RS 232 and PS/2 make possible connection to the control panel of computer keyboard, digital monitoring system, integration and installation supervising system. The control panel has 2 (POLON 4100) or 8 (POLON 4200) inputs of monitoring lines, supervising condition of connected external devices or circuits.



POLON 4200



POLON 4100

POLON 4100 Control Panel

Additionally, there is an possibility to use inputs within EKS-4001 or EWK-4001 elements, which are installed in detection loops.

The POLON 4100 and POLON 4200 control panel memory records and stores 2000 of events, which appeared during system operation. Register of these events can be printed out on a paper, in the order of date and time, by the POLON 4200 built-in thermal printer, or shown on the control panel display as well as downloaded to the computer.

Technical data

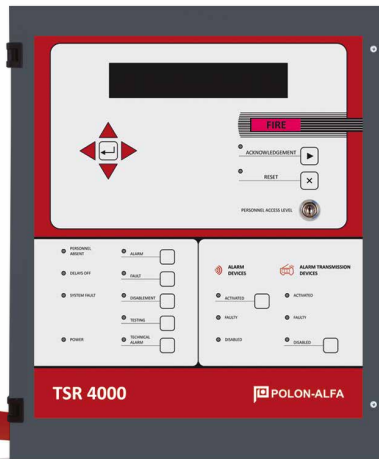
Power supply - main:	230 V AC +10-15%/50 Hz
- backup:	batteries 2 x 12 V/ from 17 to 38 Ah
Number of detection loops	4
Number of addresses on detector loop	64
Number of detection zones	256
Resistance of detector line wires	2 x 100 Ω max
Current consumption from detector line by line elements	50 mA, max
Graphical display resolution	320 x 240 pixels
Number of alarm variants	17
Programmable outputs:	
- 7 potential free relays	
switching-over contacts	1A/24 V
- 1 signal line with load limit	0.5 A/24 V
- 1 signal line with load limit	0.1 A/24 V
Monitoring inputs of external circuits	2 programmable
Dimensions	393 x 483 x 190 mm

POLON 4100 Control panel is designed for installation of fire detection and signalling systems in small buildings. The functionality of this control panel is identical with the POLON 4200 control panel. The exception is that POLON 4100 has no built-in printer.

The whole range of detectors which are available for POLON 4200 are also able to be connected to POLON 4100. The input-output elements and wireless detectors 4000 and 6000 series are free to use with POLON 4100. Compact design of this panel allows to install this device seamlessly within small reception or staff rooms.

Technical data

Power supply - main:	230 V AC +10-15%/50 Hz
- backup:	batteries 2 x 12 V/ from 17 to 38 Ah
Number of detection loops	2
Number of addresses on detector loop	64
Number of detection zones	128
Resistance of detector line wires	2 x 100 Ω max
Current consumption from detector line by line elements	50 mA, max
Graphical display resolution	320 x 240 pixels
Number of alarm variants	17
Programmable outputs:	
- 2 potential free relays	
switching-over contacts	1 A/24 V
- 1 signal line with load capacity	0.5 A/24 V
Monitoring inputs of external circuits	2 programmable
Dimensions	384 x 420 x 115 mm



■ TSR 4000



■ UCS 6000

TSR-4000 Terminal (repeater panel)

The parallel indication terminal TSR-4000 fulfils function of remote signalling and operating field. It allows to multiply of information from the POLON 4000 control panels in distant place. The terminal repeats indications of the control panel it is connected with such as: alarm, fault, disable, testing and technical alarm messages.

There is possibility to confirm alarm in the control panel and then make reset of signalling. Access to manipulation elements and functions of the terminal is divided into four access levels. There is possibility for connection up to 16 terminals TSR-4000 to one control panel. Communication between them is made through RS485 serial interface.

Technical data

Power supply - main:	230 V AC +10-15%/50 Hz
- backup:	batteries 2 x 12 V/ 7 Ah
Alphanumeric LCD display	4 x 40 characters
Relay output	1 A / 30 V
Supervised potential outputs	0,5 A / 24 V
Dimensions	314 x 368 x 106 mm

The universal control panel UCS 6000

The UCS 6000 universal control panel is designed for actuation of fire protection devices, used for mechanical or gravitation smoke ventilation (fire dampers, smoke exhaust dampers etc.). It allows to create from 1 to 8 independent control zones within one device.

The UCS 6000 control panel can operate as an independent or multizone universal smoke removal controller or as an addressable device, which is installed in addressable loops of the POLON 4100 and POLON 4200 control panels.

The UCS 6000 is able to provide 24V power from 4A up to 64A in total with its specialized MGL-60 modules. In case to operate devices which requires 230V power, there is option to install MPW-60 modules. Each MPW-60 is equipped with 2 high voltage 230V relay outputs with 5A load limit.

Using the MKA-60 addressable interface the UCS control panel becomes an advanced addressable control unit connected to the addressable loop of the fire alarm and detection system POLON 4000. This kind of integration provides many configuration possibilities and causes that these two integrated control panels become of one complete system with a real cause and effect solution.

Technical data

Power supply - main	230 V AC +10-15%/50 Hz
- backup:	batteries 12 V 7 Ah*
Output power	MGL-60 24 V power modules
MGL-60 output current	4 A or 8 A
Max total current output for 24 V	64 A
Dimensions:	
small case (max 16A)	400 x 400 x 160 mm
medium case (max 32A)	753 x 630 x 190 mm
large case (max 64A)	1150 x 630 x 190 mm

* 2, 4, 6 or 8 batteries depending on the UCS size



Microprocessor detectors 6046 and 4046 series

In each fire alarm detection system, an essential role fulfill fire detectors. The series 6064 and 4046 of low profile fire detectors, which are such ones like universal heat detector TUN-6046, two-sensor smoke – heat detector DOT-4046, and radio detector DUR - 4047, can be completed in the system by addressable beam smoke detector DOP-6001, dual smoke detectors DUO-6046 and multi sensor detector DUT-6046 (UV and IR optical sensor and 2 heat sensor).

The DUT-6046(AD) detector can operate in six operation variants, using advanced modes for co-operation of two heat and two smoke sensors.

The DUO-6046(AD) detector allows to detect smoke with IR and UV optical sensor, giving the possibility to program sensor correlation and four different sensitivity levels.

Detectors DUT-6046AD and DUO-6046AD are additionally equipped with the built-in siren.

The DOT-4046 detector can operate in seven operation variants, using advanced co-operation of heat and smoke sensors.

The TUN-6046 detector is universal one, which can be programmed from the control panel for operation as static detector or rate-of-rise/static detector, or change of the detector class for its adapting to given application.

The DOP-6001 beam smoke detector allows to protect wide area premises such like warehouses, cinemas, theatres etc.

The DUR-4047 detectors communicate with the control panel by radio.

This is the reason why they can be installed in places, where installation with wires is not possible or very difficult. All detectors are equipped with internal short-circuit isolators.

Detector base G-40

The G-40 detector base contains terminals (without screws) of cable connection strip, which allow for fast connecting of installation. Detector base design allows for flexible fastening to substrate and aesthetic introducing of cable. The detector base uses original idea of easy directing and connecting of the detector with base.

The base is equipped with a latch, making impossible withdraw of the detector without application of a special key. Additionally, a drip-proof attachment PG-40 for the base is offered, which can be used as a part of hanging base.

Technical data

Operating voltage	from 16.5 to 24.6 V DC
Current consumption in quiescent condition:	
– DUO, DOT, TUN, DUT	< 150 μ A
– DOP-6001	< 300 μ A
Operating temperature range	from -25°C to +55°C
Detector dimensions (with base)	\varnothing 115 x 54 mm
	(\varnothing 115 x 71 mm - DOT)
	(\varnothing 115 x 61 mm - DUT, DTC)
Beam smoke detector dimensions	128 x 79 x 84 mm
Base dimensions	\varnothing 107 x 28.5 mm



Manual call points ROP-4001M(H)

Information transferred by the manual call points to the control panel are taken as priority, because they are assumed as the most credible.

Electronic circuit of the manual call point checks microswitch contacts resistance and in the case of its increasing, transfers suitable information to the control panel. Similar action is made in the case of the short-circuit isolator operation or fault of the internal memory. Sealed version of the manual call point is marked as ROP-4001MH and can be installed outdoor.

The manual call point contains an original front glass, which can be used many times.

Technical data

Operating voltage	from 16.5 to 24.6 V DC
Current consumption in quiescent condition	< 140 μ A
Operating temperature range:	
– ROP4001M	from -25°C to +55°C
– ROP4001MH	from -40°C to +70°C
Ingress protection:	
– ROP4001M	IP 30
– ROP4001MH	IP 55
ROP-4001M(H) dimensions	102 x 98 x 46 mm

Addressable input/output element EKS-4001

Starting of additional fire-protection or signalling devices in the installation, as well as supervising connected devices is possible using the addressable input/output elements EKS-4001, addressable with program. This element, despite the control output relay has two monitoring inputs for supervising of the controlled devices or for independent using.

Inefficiency of monitored devices is signalled in the control panel as technical alarm. The EKS-4001 element is a changeable element, which is installed singly, doubly or fourfold in separate casings. The casings ensure high ingress level giving possibility to install elements in difficult conditions or outdoors.

The EKS-4001W allows to operate 230 V devices with potential free contacts. The maximum switchable power is up to 60W.

Technical data

Operating voltage	from 16.5 to 24.6 V DC
Current consumption in quiescent condition	< 165 μ A
Relay contacts load capacity	2 A/30 V, NO or NC
Number of monitoring inputs	2
Triggering of monitoring input	NO or NC potential free contact
Operating temperature range	from -25°C to +55°C
Ingress protection	IP 65
Dimensions:	
– module without casing	101 x 52 x 19 mm
– casing 1 x EKS	125 x 96 x 75 mm
– casing 2 x EKS	125 x 168 x 75 mm
– casing 4 x EKS	175 x 168 x 75 mm
Output (EKS-4001W)	potential-free contacts, switch-over max current 2A, max voltage 250 V AC / 220 V DC, max switchable power 62.5 VA / 60 W
Operated device supply voltage	from 6 to 220 V DC 230 V AC

Multi-output control element EWS-4001

The addressable multi-output control element EWS-4001 enables control of different fire fighting automatic devices, including switching of sound warning local systems on. The element has eight independent relay outputs with switching-over potential free contacts. Relays can be individually programmed and switched over, depending on different criteria programmed in the control panel, for instance, alarming from selected zone, sum or product of alarms from selected zones, general alarm of the control panel etc.

Technical data

Operating voltage	from 16.5 to 24.6 V DC
Current consumption in quiescent condition	< 150 μ A
Number of relays	8
Relay contacts load capacity	2 A/30 V, NO or NC
Operating temperature range	from -25°C to +55°C
Ingress protection	IP 65
Casing with glands dimensions	250 x 195 x 75 mm



Multi-input monitoring element EWK-4001

The multi-input monitoring element EWK-4001 is designed for checking of fire fighting automatic devices conditions (e.g. fire doors, smoke dampers, sprinkler installation valves), using its eight checking inputs. When checked contact (NO or NC at choice) on optional input is switched over, the element is sending technical or fire alarm signal giving, additionally, number of input which had changed its condition.

Technical data

Operating voltage	from 16.5 to 24.6 V DC
Current consumption in quiescent state	< 150 μ A
Number of checking inputs	8
Activation of monitoring input	NO or NC contact
Operating temperature range	from -25°C to +55°C
Ingress protection	IP 65
Casing dimensions with glands	175 x 146 x 75 mm

Signalling device SAL-4001

The addressable signalling device SAL-4001 is designed for local acoustic fire signalling. It can be installed in detector loops. The signalling device SAL-4001 can be supplied together or separately from three voltage sources: addressable detector line, 9 V battery 6F22, placed inside the device, or from external power supply. Switching over between power supply sources is fulfilled automatically, to keep emitted sound on maximum level. Presence of power supply sources is controlled. The signalling device is switched on after command from the control panel, after fulfilling of programmed operation criteria, e.g. after detection of fire in selected detection zone or group of zones, general alarm in the control panel etc.

Technical data

Operating voltage	from 16.5 to 24.6 VDC
Current consumption from detector line:	
– in quiescent condition	150 μ A
– in signalling condition	600 μ A
Sound level with power supply from:	
– detector line	85 dB
– battery	94 dB
– external power supply unit	100 dB
Operating temperature range	from -10°C to +55°C
Dimensions (with base)	\varnothing 115 x 54 mm

The SAW-6001/6006 signaling device

Addressable signaling devices SAW-6001/6006 are designed for local signaling of a fire alarm with either tones (SAW-6001) or tones and voice messages (SAW-6006). For a proper operation it requires two sources of power supply; detection line and 9 V battery or detection line and external power supplier. The selected sources of power are monitored. The sound output volume is independent from the selected source of the power.

Technical data

Operating voltage	from 16.5 to 24.6 V
External power supplier voltage	from 9.6 V to 30 V
Current consumption from detection line:	150 μ A
Max current consumption from power supplier:	50 mA
Sound pressure	103 dB
Operating temperature range	from -25°C to +55°C
Dimensions (including base)	\varnothing 115 x 70 mm

ADC-4001M and ACR-4001 adapters

The ADC-4001M adapter is designed to transfer information about the status of the detector line connected to the adapter, so called "side line" (conventional), as well as about the status of the POLON-ALFA produced non-addressable safe detectors with a proper Safety separator or other elements, equipped with nonpotential relays. The ACR-4001 adapter enables connection of wireless detectors DUR-4047 and wireless manual call points ROP-4007(H) to the control panel. Single ACR-4001 can operate with max 16 wireless addressable detectors or 10 MCP.

Technical data of the ADC-4001M adapter

Operating voltage	from 16.5 to 24.6 V
Admissible side line load current (at choice)	0.15 mA, 0.3 mA, 1 mA or 2 mA
Current consumption (depending on chosen mode)	from 0,5 mA to 16 mA
Side line resistance	2 x 25 Ω max
Operating temperature range	from -25°C to +55°C
Dimensions (with base)	\varnothing 115 x 54 mm

